

## Additional Notes on Some Pacific Coast Mollusca - Geographical, Ecological, and Chronological

BY

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FOR MANY YEARS, most California malacologists, myself included, have assumed that the offshore benthic marine fauna of northern California was an extension of more northern faunas which were inhabiting suitable biomes in more southern latitudes. Such biomes would be characterized by a substratum normal to the species, plus a compatible isotherm in which the temperature requirements of the species would be met. During the past few years the local dragboat fishermen operating out of Humboldt Bay on the extreme northern California coast have brought in specimen material which appears to contradict this theory, as a number of species belong to what we have assumed to be southern faunas.

Based upon local fossiliferous deposits, it now appears that in many cases these northern and southern additions to our distributional records are not Recent, but in some cases the species can be traced in chronological order from Middle Pliocene to Recent.

I present these records in the hope that they will stimulate interest in the offshore benthic marine invertebrates, as not only the distribution, but the ecology and taxonomy of many are, to say the least, imperfectly known.

The project area is based upon the fishing regions of the local dragboat fleet, and extends from the submerged Noyo Canyon off Fort Bragg, Mendocino County, California north to off Mack Arch, Curry County, Oregon (lat. 39°30'N to 42°15'N). This region includes the major portion of the Pliocene Wildcat Group of Ogle, including the Centerville Sea Cliffs, and the Moonstone Beach Site as well as the Upper Pleistocene Crannell Site, which allows a comparison of the species found both as Recent material in dredgings and as fossil specimens.

### AMPHINEURA

The nets of the dragboats skim over the seabed gathering in not only fish but also specimens of marine invertebrates,

historical items, and geological specimens. Among these is a specialized rock type, a calciferous mudstone, pitted with holes and crevices, and extremely dense and heavy. I have never seen a similar rock on shore or even in one of our local fossil deposits. Most of this rock is obtained from between 200 and 400 fathoms (360 and 720 m) in depth; from this rock I have obtained 3 small chitons. These were found hidden amid the cavities, and represent one northern species and two that previously had been considered to belong to a southern fauna.

#### *Ischnochiton abyssicola* Smith & Cowan, 1966

Several small specimens of this benthic species have been found living on rock at depths which ranged from 240 to 400 fathoms (432 - 720 m). All of these were taken from off Trinidad, California (lat. 41°05'N). There was no noticeable difference in either the valves or the girdle between these specimens and a series of specimens from more northern waters in the collections of the California Academy of Sciences.

#### *Ischnochiton golischi* Berry, 1919

Four specimens were obtained by the *Flicker* in 1967, taken on a massive piece of pitted rock, dredged from 200 fathoms (360 m) near the submerged Eel Canyon (lat. 40°26'N). Berry's type locality is off Santa Monica, California in 100 fathoms (180 m), but SMITH & GORDON (1948) reported the species from the deep intertidal levels down to 80 fathoms (144 m) at Monterey, California.

#### *Ischnochiton* cf. *I. stearnsii* Dall, 1902

A single specimen, matching in nearly all details *Ischnochiton stearnsii* Dall, 1902, was taken in 360 fathoms (648 m) off Trinidad, California (lat. 41°05'N) by the *Mineo Brothers*. The specimen was tentatively identified as this species; Mr. Allyn G. Smith concurred in this tentative identification. The slight variations from Dall's species may be due to age, geographical locality, or perhaps even to a different ecological situation. As far as I can

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determine, the variability of this little known chiton has never been worked out due to a lack of suitable material.

## GASTROPODA

### *Epitonium indianorum* (Carpenter, 1865)

Although the data on this species from within the project area do not add to the knowledge of the geographical distribution, the notes indicate an addition to the known benthic record, and some interesting information on the species in time within the same area. Specimens have reached me which have been taken from as deep as 150 fathoms (270 m) from numerous localities within the project area, usually from a sandy mud bottom. Fossil specimens from the Crannell Junction Site, Upper Pleistocene, match in all details the shells of the local intertidal specimens as well as the benthic material of this species. However, in the extreme Upper Pliocene at Moonstone Beach the species changes somewhat in the whorls and in the Middle to Lower Pliocene, Rio Dell Formations, the species is quite changed, but still closer to *Epitonium indianorum* than to any other species. At the present time the information is inconclusive as to whether the erection of a separate species or subspecies is warranted; only additional material will permit a decision whether the differences in physical characteristics are sufficient to justify a new taxon.

### *Crepipatella charabdis* (Berry, 1940)

Berry's material was taken in the fossiliferous Palos Verdes Sands, but locally the species is found only as a Recent species. Specimens have been obtained from pits and crevices of rocks brought up from between 100 and 200 fathoms (180 to 360 m). Most specimens are small, under 10 mm in diameter, but a few are up to 20 mm in diameter. One shell, taken off the shell of a *Neptunea smirnia* (Dall, 1919) presents a problem, as it has the basic shape of *Crepipatella orbiculata* (Dall, 1919), rounded, inflated, and highly arched, but with the coarse ribbing of *C. charabdis*. Dr. James H. McLean (personal communication) considers this one specimen to be a pathological example of *C. orbiculata*, which locally is taken on the shells of the great white whelk, *Neptunea pribiloffensis humboldtiana* A. G. Smith, 1971.

### *Capulus californicus* Dall, 1900

I have in my collection 3 specimens of this species, all taken as commensals on the large *Pecten* (*Patinopecten*) *caurinus* Gould, 1850. All were obtained in the vicinity of

Trinidad, California (lat. 41°05'N), and in less than 100 fathoms (180 m), usually from a generalized sandy to sandy mud bottom, the normal habitat of this large scallop. *Capulus* have been known from this region to some malacologists prior to 1949, based upon specimens from both the Ferguson and the Talmadge collections, but this information had never been presented for publication. Although not common, the data indicate that the species is not too rare in these latitudes.

### *Megasurcula carpenteriana* (Gabb, 1865)

Recent specimens of this species, taken off northern California, have been examined at the California Academy of Sciences; I have 2 in my collection from off Eureka, California, from a sandy bottom at a depth of 100 - 150 fathoms (180 - 270 m) (lat. 40°45'N). Mr. Roy Kohl, Technician for the Department of Geology, Humboldt State College, Arcata, California, has some specimens from the Lower Pleistocene, Crannell Junction Site, and WEAVER (1942, 1945) lists the species in the Pliocene Wildcat Formation of Oregon. I have not found the species in the Wildcat Formations of this area. It is quite possible, even probable, that in due time Recent specimens of this species will be found along either the Oregon or Washington coasts, or, perhaps both.

### *Trophonopsis dalli* (Kobelt, 1878)

A soft mud seabed at a depth of about 200 fathoms (360 m) seems to be the obligatory habitat for this crenulated Trophon, which has been reported chiefly from northern waters. Most specimens have reached me from off the Centerville Sea Cliffs, near the submerged Eel Canyon (lat. 40°26'N) and from a depth of about 200 fathoms (360 m). There is a fossil Trophon in the Pliocene Centerville Sea Cliffs, which I cannot distinguish from the Recent specimens taken off this part of the coast. In 1964, Faustman used the name *Boretrophon durhami* for the fossil species, and listed the range as in the Centerville Sea Cliffs and the Elk River Formations, at Cape Blanco, Oregon. Specimens of Recent *Trophonopsis dalli* were obtained from British Columbia waters for comparison with northern California material to see if there were any shell characteristics separating the more northern examples from the California material, and to double check the comparisons with the fossil material. I was unable to separate any of the material into other than a single species. With this information, I consider that *B. durhami* Faustman, 1964, is a synonym of *T. dalli* (Kobelt, 1878), and that the species has been present in northern California waters since Late Pliocene times up to the present.

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